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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,385	12/19/2000	Paul A. Bottorff	Q62415	3308

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EXAMINER

SEFCHECK, GREGORY B

ART UNIT	PAPER NUMBER
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2662

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,385

Applicant(s)

BOTTORFF ET AL.

Examiner

Gregory B Sefcheck

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-16, 18-20, 24-31, 33-35, and 39-46 is/are rejected.
- 7) ☒ Claim(s) 4-6, 17, 21-23, 32, 36-38 and 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 18, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Russell et al. (US006704326B2), hereafter Russell.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

- In regards to Claims 1, 18, and 33,

Russell discloses payload mapping in synchronous networks (Title).

Referring to Fig. 7, Russell discloses receiving Ethernet packet frames, which may be transmitted at the known Ethernet rate of 10Gb/s.

Russell further shows adapting (compressing) the data rate of the Ethernet frames to suit a synchronous container (claim 1,18,33 – compressing the Ethernet data), and including the adapted Ethernet frames in the synchronous container, such as an STM container at 9.953280 Gbaud, for transmission across an SDH network (claim 1,18,33 – method and interface for transporting/interfacing a 10Gb/s Ethernet LAN comprising receiving a sequential series of MAC frames across a 9.953280 Gbaud synchronous packet network; claim 1 – providing a synchronous container at sending interface; claim 1,18,33 – mapping compressed Ethernet to the synchronous container; claim 1 – launching the synchronous container across the network).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 11-13, 18, 28, 33, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bromley et al. (US006658021B1), hereafter Bromley in view of the Admitted Prior Art of Fig. 2, described in the specification on pgs. 10-11.

- In regards to Claims 1, 18, and 33,

Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface (Title; Abstract).

Referring to Figs. 3 and 20, Bromley shows encapsulating (mapping) data of various protocols onto a SONET transport frame (claim 1 – providing a synchronous container at sending interface; claim 1 – launching the synchronous container across the network)

Bromley further discloses that encapsulation may be performed with compression of the data protocol (Col. 10, lines 50-60; claim 1,18,33 – compressing the Ethernet data; claim 1,18,33 – mapping compressed Ethernet to the synchronous container).

Bromley does not explicitly disclose the transporting of 10Gb/s Ethernet of sequential MAC frames across a 9.953280 Gbaud synchronous packet network.

The admitted prior art of Fig. 2 shows encapsulating Ethernet frames in a synchronous container while Bromley discloses encapsulation of PPP, IP, and Frame Relay data within a SONET OC-1, OC-3, OC-12, or OC-48 frame structure. Extending the functionality of Bromley to the OC-192 frame structure of SONET and Ethernet frame data as shown by the admitted prior art would enable use of the method and interface for encapsulating Ethernet at various SONET rates (claim 1,18,33 – method and interface for transporting/interfaces a 10Gb/s Ethernet LAN comprising receiving a

sequential series of MAC frames across a 9.953280 Gbaud synchronous packet network).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the method and interface of Bromley for transporting 10Gb/s Ethernet over a SONET OC-192 frame. Adaptation of the method and interface of Bromley would enable encapsulation of all data types into a SONET frame as well as enabling the use of SONET frame structures with increased transmission rates.

- In regards to Claims 12, 28, and 43,

Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface that covers all limitations of the parent claim.

Referring to Fig. 7, Bromley discloses decapsulation of the encapsulated and transmitted data received from the sending interface (Title; claim 12,28,43 – receiving a synchronous container encapsulating compressed Ethernet data from the sending interface; claim 12,28,43 – extracting the compressed data from the synchronous container; claim 12,28,43 – decompressing the compressed data to recover Ethernet).

- In regards to Claims 11 and 13,

Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface that covers all limitations of the parent claim.

Bromley does not explicitly show launching by inverse multiplexing the synchronous container into a plurality of data streams launched and received on a respective channel, where each stream is then aligned and multiplexed to recover the synchronous container.

Fig. 2 of the instant application discloses launching a synchronous container of Ethernet frames through inverse multiplexing into plural data streams and receiving each data stream on a respective channel that is aligned and multiplexed to recover the Ethernet data. Fig. 2 shows this launching and receiving using a synchronous container of a slightly higher rate (claim 11,13 - launching comprises inverse multiplexing the synchronous container into a plurality of data streams and launching each stream into a respective channel; claim 13 – receiving comprises receiving a respective data stream through each one of the plurality of channels; claim 13 – aligning each of the received streams; claim 13 – multiplexing the aligned streams to recover the synchronous container).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the method and interface of Bromley for launching and receiving Ethernet data over SONET by inverse multiplexing the SONET into a plurality of streams that are launched and received on a respective channel, where they are

aligned and multiplexed to recover the Ethernet data, as shown by the prior art implementation of Fig. 2. Applying this technique to Bromley would yield efficient transport of the data at the lower, standardized SONET rates disclosed by the method and interface of Bromley.

5. Claims 2, 3, 9, 10, 19, 20, 26, 27, 34, 35, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bromley in view of Admitted Prior Art of Fig. 2 further in view of Stewart et al (US006389036B1), hereafter Stewart.

- In regards to Claims 2, 3, 19, 20, 34, and 35,

Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface that covers all limitations of the parent claim. Bromley shows a synchronous container in the format of a SONET frame, with the encapsulated data being mapped into the payload of the SONET frame directly after the overhead bytes (claim 3,20,35 – frame format conforms to a STS-192c; claim 9,26,41 – mapping the compressed Ethernet comprises adding successive frames of the compressed data directly to the SONET/SDH frame; claim 10,27,42 – successive MAC frames are added immediately following the stripped TOH).

Bromley does not explicitly disclose the frame having a stripped transport overhead.

Stewart discloses transporting of SONET frames. Stewart discloses that compressing and/or dropping of overhead bytes can achieve more efficiency of bandwidth in transmission (Abstract; claim 2,19,34 – synchronous container comprises a line/column frame format conforming to a SONET frame and a stripped transport overhead).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method and interface of Bromley for transporting data in a SONET frame to utilize a stripped transport overhead, thereby achieving more efficiency in the utilization of bandwidth for transmission of the data.

6. Claims 7, 8, 16, 24, 25, 31, 39, 40, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bromley in view of Admitted Prior Art of Fig. 2 further in view of Lewin et al. (US006608834B1), hereafter Lewin.

- In regards to Claims 7, 8, 16, 24, 25, 31, 39, 40, and 46,

Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface that covers all limitations of the parent claim.

Bromley does not explicitly show the compression of Ethernet data by removing an IFG between frames.

Lewin discloses encapsulating Ethernet frames over VDSL. Lewin discloses removing the IFG between successive Ethernet frames for transmission over the VDSL facility. Lewin also discloses inserting the IFG when Ethernet frames are received from the VDSL facility (Col. 10, lines 15-19; claim 7,24,39 – step of compressing Ethernet comprises removing an inter-frame gap between successive MAC frames; claim 16,31,46 – step of decompressing comprises inserting an inter-frame gap between successive frames). Lewin also discloses a policy of dropping frames, where data will be lost if the frame is non-idle. This shows that dropping of idle frames can provide additional bandwidth without the loss of vital data (Col. 11, lines 1-11; claim 8,25,40 – step of compressing further comprises removing idle MAC frames).

It would have been obvious to one of ordinary skill in the art at the time of the invention to compress Ethernet data for encapsulation in the method of Bromley by removing idle frames and the IFG between Ethernet frames when encapsulating the data for transmission in a SONET frame. Idle frames and the IFG between Ethernet frames is used to facilitate collision detection and avoidance. Such functionality would be unnecessary when Ethernet is encapsulated in another transmission structure, as shown by Lewin, thereby providing additional bandwidth for transmission of payload in the SONET frame.

7. Claims 14, 15, 29, 30, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bromley in view of Admitted Prior Art of Fig. 2 further in view of Upp et al. (US 5,040,170), hereafter Upp.

- In regards to Claims 14, 15, 29, 30, 44, and 45,
Bromley discloses a method of data encapsulation and decapsulation in a SONET frame over a communication interface that covers all limitations of the parent claim.

Bromley does not explicitly show extracting by synchronizing a read clock with the synchronous container by detecting a transition between A1 and A2 before reading the encapsulated payload data.

Upp discloses a cross-connecting of high speed digital signals. Upp discloses receiving SONET data by synchronously aligning with a clock by detecting the A1 and A2 framing bytes, as is notoriously well-known in the art (Fig. 4; Col. 11, lines 20-25; claim 14,29,44 – extracting comprises synchronizing a read clock with the synchronous container; claim 14,29,44 – reading successive MAC frames of the compressed data stream from the synchronous container starting immediately following the TOH; claim 15,30,45 – synchronizing read clock comprises detecting a transition between A1 and A2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to extract data from the SONET frame transmission of Bromley by synchronizing to a read clock by detecting the transition between the A1 and A2 framing

bytes of the SONET overhead, as shown by Upp, before reading the payload data in the frame. This synchronous procedure is basis for the framing bytes in the overhead structure of the Synchronous Optical Network standard format.

Allowable Subject Matter

8. Claims 4-6, 17, 21-23, 32, 36-38, and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- Regarding claims 4, 21, and 36,

The prior art of record does not teach or fairly suggest a method for transporting 10Gb/s Ethernet across a synchronous packet network through a SONET OC-192 frame having a stripped transport overhead comprising only the A1 and A2 octets.

- Claims 5, 6, 22, 23, 37, and 38 depend from claims 4, 21, and 36, respectively.
- Regarding Claims 17, 32, and 47,

The prior art of record does not teach or fairly suggest a method for transporting compressed 10Gb/s Ethernet across a synchronous packet network through a SONET OC-192 frame where an inter-frame gap is inserted in the compressed Ethernet by monitoring a preamble of a first MAC frame, reading a length of a data portion to identify a trailing byte of the first MAC frame and inserting an idle MAC frame into the compressed Ethernet immediately following the identified trailing byte.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

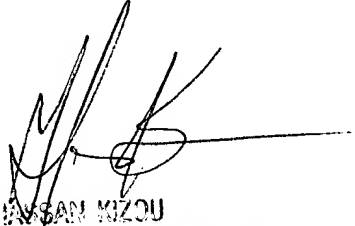
- Kfir et al. (US 20020181499A1) discloses a method and device for delivering communication in Ethernet-over-synchronous networks
- Lentine et al. (US 20020037018A1) discloses an apparatus and method for reducing the line rate of time-multiplexed signals
- Goodman et al. (US006636529B1) discloses a semi-transparent tributary for synchronous transmission
- Denton et al. (US006567413B1) discloses an optical networking module including protocol processing and unified software control
- Russell et al. (US006496519B1) discloses frame based data transmission over synchronous digital hierarchy network
- Kulkarni et al. (US006414966B1) discloses a bridging device for mapping/demapping Ethernet packet data directly onto and from a SONET network
- Klish (US006014708A) discloses an adaptor and method for mapping a fast Ethernet payload input signal to a synchronous payload envelope as well as a clock selector for use therewith
- Videlock et al. (US005179555A) discloses high speed data compression and transmission for wide area network connections in LAN/bridging applications

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 571-272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GBS
9-30-2004


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